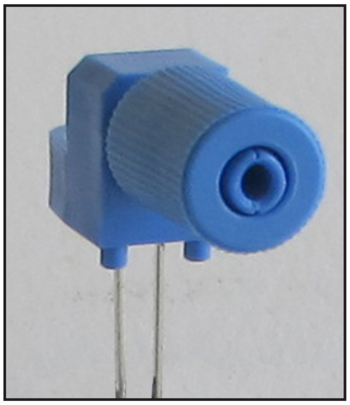
Plastic Fiber Optic Green LED IF E93



Description

The IF-E93 is a high-output, high-speed, green LED housed in a "connector-less" style plastic fiber optic package. The output spectrum of the green LED is produced by a Gallium Nitride die which peaks at a wavelength of 522 nm, ideally mapping to the lowest attenuation window of PMMA plastic core optical fiber. The device package features an internal LED micro-lens, and the PBT plastic housing ensures efficient optical coupling with standard 1000 µm core plastic fiber cable.

Application Highlights

The high output and fast transition times of the IF-E93 make it suitable for low-cost digital data links. When coupled to PMMA plastic optical fiber, attenuation is less than .1 dB/m, as compared to .16 dB/m with commonly used 650 nm LEDs. Using standard 1 mm core plastic fiber, the IF-E93 LED is capable of distances in excess of 150 meters at data rates of 5 Mbps. The drive circuit design is simpler than required for laser diodes, making the IF-E93 a good, low-cost alternative in a variety of analog and digital applications.

- Ultra-Low Loss in Plastic Optical Fiber
- No Optical Design Required
- Mates with Standard 1000 µm Core Jacketed Plastic Fiber Cable
- Internal Micro-Lens for Efficient Coupling
- Inexpensive Plastic Connector Housing
- Connector-Less Fiber Termination and Connection
- Interference-Free Transmission from Light-Tight Housing
- Visible Light Output
- Fast Rise and Fall Times
- RoHS Compliant

Applications

- Local Area Networks (LANs)
- Optical Sensors
- Medical Instruments
- Automotive Displays
- Audio Systems
- Electronic Games
- Robotics Communications
- Fiber Optic Modems
- Fluorescent Instruments
- Wavelength Multiplexing

Maximum Ratings

(T_A=25°C)

Operating and Storage Temperature Range (T_{OP},T_{STG}) ....-40° to 60°C

Junction Temperature (T_J) .....85°C

Soldering Temperature (2 mm from case bottom) (T_S) t ≤ 5s ....240°C

Reverse Voltage (V_R)...............5 V

Power Dissipation (P_{TOT}) T_A=25°C............60 mW

De-rate Above 25°C....1.1 mW/°C

Forward Current, DC (I_F) ...35 mA

Surge Current (I_{FSM}) t ≤ 10 µs ....150 mA

Characteristics (T_A =25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit
Peak Wavelength	λ_{PEAK}	-	522	-	nm
Spectral Bandwidth (50% of I_{MAX})	$\Delta\lambda$	-	40	-	nm
Output Power Coupled into Plastic Fiber (1 mm core diameter). Distance Lens to Fiber ≤ 0.1 mm, 1 m SH4001 fiber, I_F=20 mA	Φ min	165 -7.8	465 -3.3	575 -2.4	µW dBm
Switching Times (10% to 90% and 90% to 10%) (F=33 MHz, I_F=10 mA) *See Figure 3*	t_r, t_f	-	145, 80	-	ns
Capacitance (V_F=0, F=1 Mhz)	C_0	-	55	-	pF
Forward Voltage (I_F=20 mA)	V_f	-	3.1	-	V

CAUTION: The IF E93 is ESD sensitive. To minimize risk of damage observe appropriate precautions during handling and processing.

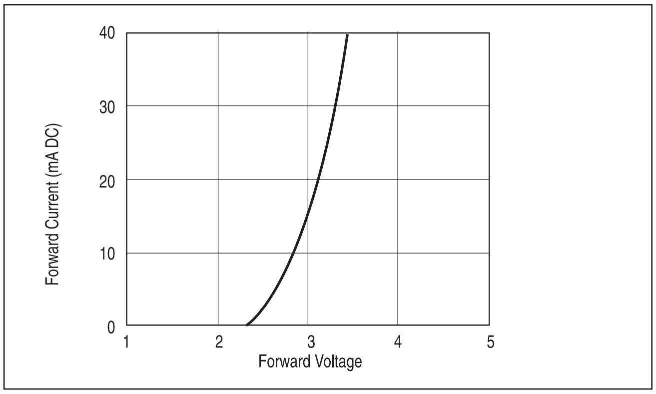


FIGURE 1. Forward current vs. forward voltage.

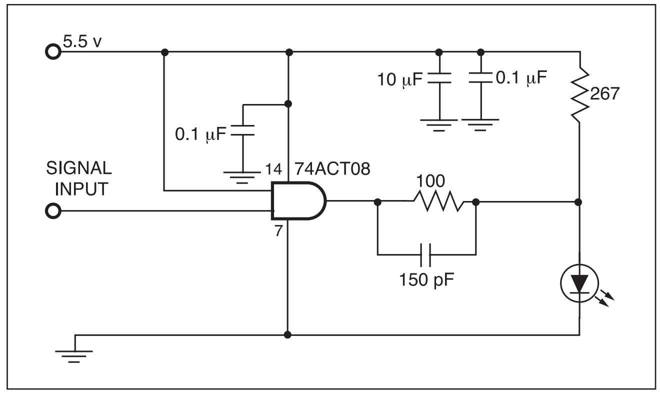


FIGURE 3. Test drive circuit (I_F = 22mA).

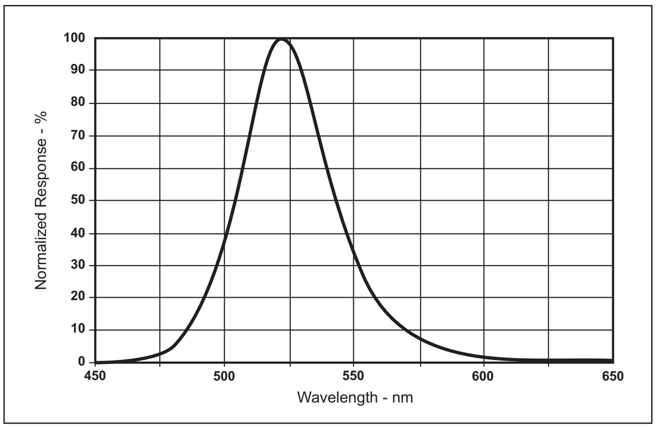


FIGURE 2. Typical spectral output vs. wavelength.

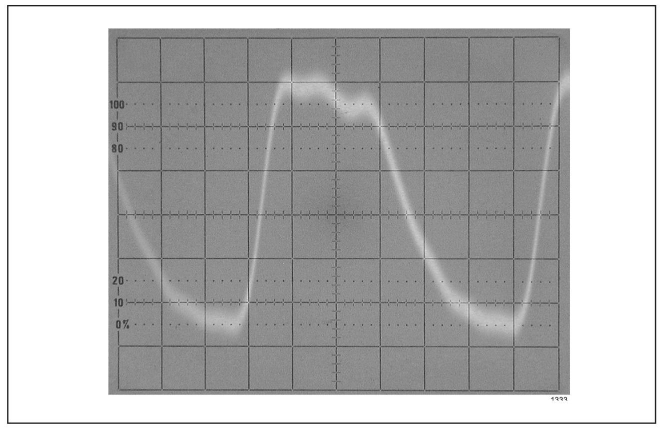
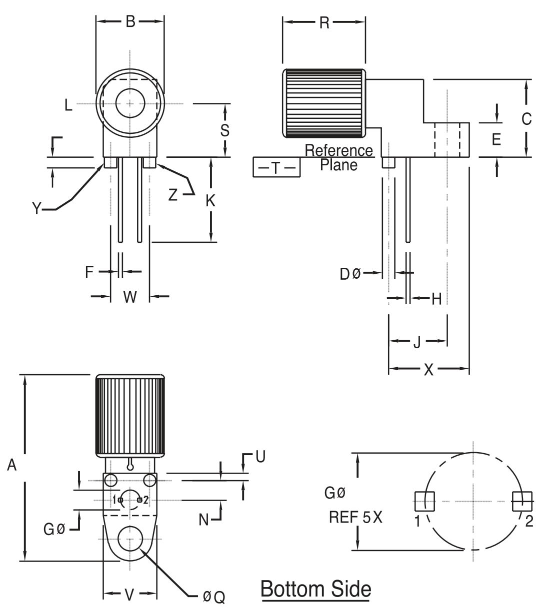


FIGURE 4. Transition times - Sweep = 5nS/div.



NOTES:
1. Y AND Z ARE DATUM DIMENSIONS AND T IS A DATUM SURFACE.
2. POSITIONAL TOLERANCE FOR D ø (2 PL): ⊕ ø 0.25 (0.010)Ⓜ T YⓂ ZⓂ
3. POSITIONAL TOLERANCE FOR F DIM (2 PL): ⊕ 0.25 (0.010) Ⓜ T YⓂ ZⓂ
4. POSITIONAL TOLERANCE FOR H DIM (2 PL): ⊕ 0.25 (0.010) Ⓜ T YⓂ ZⓂ
5. POSITIONAL TOLERANCE FOR Q ø (2 PL): ⊕ ø 0.25 (0.010)Ⓜ T YⓂ ZⓂ
6. POSITIONAL TOLERANCE FOR B (2 PL): ⊕ ø 0.25 (0.010)Ⓜ T
7. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
8. CONTROLLING DIMENSION: INCH

	MILLIMETERS		INCHES	
DIM	MIN	MAX	MIN	MAX
A	23.24	25.27	.915	.995
B	8.64	9.14	.340	.360
C	9.91	10.41	.390	.410
D	1.52	1.63	.060	.064
E	4.19	4.70	.165	.185
F	0.43	0.58	.017	.023
G	2.54 BSC		.100 BSC	
H	0.43	0.58	.017	.023
J	7.62 BSC		.300 BSC	
K	MIN 9.0		MIN .35	
L	1.14	1.65	.045	.065
N	2.54 BSC		.100 BSC	
Q	3.05	3.30	.120	.130
R	10.48	10.99	.413	.433
S	6.98 BSC		.275 BSC	
U	0.83	1.06	.032	.042
V	7.49	7.75	.295	.305
W	5.08 BSC		.200 BSC	
X	10.10	10.68	.397	.427

PACKAGE IDENTIFICATION:
- Blue housing w/double green dot
- PIN 1. Cathode
- PIN 2. Anode

FIGURE 5. Case outline.

Specifications are believed to be accurate but are subject to change. Industrial Fiber Optics assumes no responsibility for the consequences of using the information provided beyond replacement warranty for products not meeting stated specifications. Industrial Fiber Optics products are not authorized for use in life support applications without written approval from the President of Industrial Fiber Optics Corporation.

CAUTION:
- To avoid degraded device life due to package stress, do not bend or form leads outside the orientation shown on drawing.
- Ensure that solder flux does not migrate into the device and block the optical path, degrading the performance.
- If washing the device, liquid may become trapped in the part cavity. Ensure that all potentially corrosive materials are flushed out of the device.